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ABSTRACT

After an extensive review of the literature concerned with evaluating career objectives, a literature with little cohesion, six areas were isolated as crucial indices of the adequacy of career education. These areas are: (1) self-awareness, (2) career-awareness, (3) decision-making skills, (4) overall school behavior, (5) career competencies, and (6) career attitudes and interests. Measures in all six areas should be obtained for the evaluation of career education programs. Preferably, measures should be obtained through experimental and quasi-experimental designs with pretest data, rather than case study methods. One advantage of using an experimental design is that resulting data is quantitative and may be statistically analyzed. Special emphasis is given to the equality of the control group with the experimental group because of validity problems related to the maturation bias. The importance of research follow-up is also stressed. Guidelines and recommendations are offered to reduce the amount of error in the evaluation of career education programs. (BJG)

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# Evaluating Career Education: A Review and Model[1]

by

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# Evaluating Career Education: A Review and Model

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The purpose of this paper is to (1) examine and review evaluations of career education programs currently in the literature, and (2) to suggest a model or paradigm for conducting such evaluations. The first part of the paper will present past work and the second part suggest guidelines for future work.

## I. A Review of Evaluative Studies of Career Education

This review is organized into three sections. In the first, studies are described that employed a control or comparison group with which to compare the results of the group receiving the career education experience. We call this an experimental or quasi-experimental design. (This section is further subdivided to distinguish between those that use both pretest and posttest and those that use posttest only.) The second section of studies includes ones employing only a treatment group but using quantitative data, typically on a pretest-posttest basis, to evaluate the effects of the treatment. We call this a descriptive approach. The third section is like the second in that only a single group is employed but, unlike the second, only qualitative data are obtained. We call these case studies.

### Experimental and Quasi-Experimental Evaluative Studies

Pretest-Posttest Designs. The most extensive and complete evaluations include both an experimental or treatment group -- one which receives the career education experience, and a control or comparison group which does not receive the experience. On the one or more outcome measures employed, data are collected at the start of the experience (pretest) and its conclusion (posttest). These designs, as we shall see later on, control for

various forms of experimental bias. Eight evaluations were found that used this approach.

Cochran and Horts [1977] evaluated the effect of career exploration programs on ninth and tenth graders in Dayton, Ohio, at an area vocational high school and a general high school. Students from the two program schools and a control high school were pre- and posttested on the Ohio Vocational Interest Survey, the Tennessee Self Concept Scale, and a study-constructed Career Plans Survey. Using analysis of covariance, the results showed that students from the vocational school were better informed about career choice and demonstrated more positive attitudes toward their abilities and chances for vocational advancement as compared to students from the control school and general high school. However, changes in vocational interests were more closely related to grade level than to school program.

Holst in [1977; see also Holstein, 1971 and Olson, 1972] describes the evaluation of an exemplary rural area career education program for Lincoln County, West Virginia. The project conducted a product evaluation for grades 1-6 utilizing an experimental design in which 40 students per grade level were randomly assigned to the experimental group and 40 to the control group. All students in the study were pre- and posttested in (1) language and (2) mathematics achievement using the California Achievement Tests and on a homemade test of (3) occupational awareness. Results, using an analysis of covariance with pretest scores as covariates, showed that career education students outperformed control students on all measures.

Hagueley [1973] used the Gordon Occupational Checklist, Crites' Career Maturity Inventory, and Westbrook's Vocational Maturity Scale to compare changes from pre- to posttest among students experiencing a career education program in the city of Memphis to those not. Results of t-tests

vocational education, guidance, and a broad-based curriculum into a university and experimental cohort school for elementary, middle and secondary schools. Students in the participating schools and in the control schools were tested at the end of one, two, and three years of involvement in the project. The student evaluation activities use [illegible] Inventory Test of Occupations, homemade attitude scales and questionnaires, school records, and standardized achievement tests. The multiple [illegible] analysis of variance and non-repeated work in [illegible] [illegible] to [illegible] significant differences between treatments and control in knowledge of occupations, attitude toward self and others, attitude toward the curriculum, additional career counseling, number of dropouts with job entry skills, and reduction of dropouts. It [illegible] toward lower absentee rate at the senior high school and higher academic achievement for some of the classes in third, fourth, and sixth grades among treatment groups. It significant increases for treatment groups in attitude toward vocational education by teachers, number of students applying to post-secondary schools, number of students enrolling in vocational programs in high school, number of students enrolling in work study and part-time employment. Process evaluation using program matrix was highest at the elementary and middle school level and lowest at the secondary level.

Activity (1970) studied a Career Opportunities and Practical Experiences (COPE) Program involving persons and agencies at the Acton-Boxborough High School in Massachusetts. The study included 120 students randomly selected from a larger group of volunteers. The first 60 students were assigned to the experimental group and the last 60 to the control group. The COPE program provided for vocational exploration in the community with [illegible] work sites and [illegible] and experiences for

students of an elementary age for various ages. The process evaluation conducted via an evaluative questionnaire answered by by participating students, parents, teachers, and counselors, mostly in positive responses given by the participants. Both groups were pretested on the Self-Efficacy Test of Personality and Career Maturity Inventory, and an analysis of covariance was carried to the data. Analysis indicated that, relative to the control group, there were no significant gains in personal adjustment, social adjustment, and vocational development by the treatment group. A positive and significant correlation between scores on the CVI and CMI for all students (N=150) was obtained.

Gorman (1970) conducted a study to determine the change in career maturity and job perceptions of sixth-, seventh-, and eighth-grade students after teachers participated in career education treatment classes. The study was construed in that world centered twelve-partial school districts. The treatment group total 40 students, and the control group 38 students all of whom were pre- and pretested on the Attitude Scale and Competence Test of Crites' Career Maturity Inventory. T tests revealed significant differences in mean scores on both parts of the CMI in favor of the treatment group.

The eight studies reviewed above used essentially the same design but a variety of outcome measures ranging from academic achievement to career information to career maturity. Career education was found to have significant effects in contrast to a control environment but not uniformly across studies and across measures.

Synthesis Review. Nine studies examined here compared treatment and control groups but did not utilize a pretest. This procedure is

Pontiac, Michigan. The Occupational Knowledge Test was administered on a pretest and posttest basis to students in kindergarten through grade 6 in project schools. Using t-tests to analyze the data, student posttest means were found to be significantly higher than pretest means. The measurement of students' self-concept with the Fantasy, Ability, Reality Test also resulted in significant gain scores. The Crites Career Maturity Inventory given to sixth graders indicated student gain. An extensive process evaluation was undertaken and is included in the report.

An occupational preparation program presented by Young (1971) in New Orleans, Louisiana involved all levels of community education. Elementary school emphasis was on field trips with experiences to develop realistic attitudes toward work; middle school emphasis was on curriculum dealing with occupational information and guidance; instruction at the senior high school level combined on-the-job training with vocational guidance and job placement. A pre- and post Attitude Towards Work Inventory was administered to project participants only. A significant positive gain (t-test) was found for students in grades 1-8.

An interdisciplinary career assessment program described by Lapinsky (1972) was an experiment in curriculum revision begun in 1969 at Stamford High School, Stamford Connecticut, for the purpose of providing instruction relevant to the needs of 86 slow learners and disadvantaged youth. The cluster concept and correlation of classroom materials to occupational assessment and skill training were essential to the program. For evaluation, a pre- and postexamination was conducted on data gathered from anecdotal and cumulative records, questionnaires, inventories, teacher rating scales, the Mooney Problem Checklist, and the SRA Basic Skills in Aritnmetic Test. Much

of the pretesting was conducted after the program was initiated. According to the findings, the program met with above-average success.

Bishop (1973) examined a research and development project in career education for Mobile County and Phenix City Public Schools, Alabama. The results were tabulated from some pre- and posttest scores of a small random sample of program students. The instruments used were the Career Maturity Inventory, a self concept scale, and a semantic differential scale. The limited testing revealed no significant findings. There was an indication that student and teacher attitude toward career education was favorable.

Gibson (1973) directed a three-year continuous occupational information project for grades 1-12 in Henderson County Schools, Kentucky. Results on a staff-developed self-concept inventory, the Comprehensive Tests of Basic Skills, Ohio Vocational Inventory Survey, General Aptitude Test Battery, and Barclay Classroom Climate Inventory led the evaluators to conclude that the school curriculum had changed from a traditional subject-matter orientation to a more life-centered one.

Hammond (1973) conducted an evaluation of a planned career education program for rural students in grades 7-10 in Harrington, Maine which provided a variety of experiences and knowledge to form a basis for future educational and occupational choices. Paired t-tests were performed on pre- and posttest results of project school seventh and tenth graders taking the Occupational Knowledge Test. Results showed significant gain in mean scores of seventh grade students but not tenth grade students. Significant correlations were obtained between scores on the Lorge-Thorndike Intelligence Test and the Occupational Knowledge Test for both seventh and tenth graders.

A career education project was evaluated by Jorgensen (1973) in Petersburg City and Radford City, Virginia which aimed at the development and implementation of elementary level career awareness and an improved guidance, counseling and placement service. Results on a pre- and post-homemade career awareness test by K-8 project students indicated no significant increase in occupational knowledge by participating students.

Lewis (1973) evaluated a career education project in Batesville-Leesville, S.C. and used PERT to conclude that the required program activities had been carried out. However, pre- and posttesting of occupational orientation produced inconclusive results.

The purpose of a study by Lowe (1973) was to examine selective effects of a career education program on upper elementary students in Calhoun County, Michigan. The Career Development Battery and the Occupational Aspiration Scale were administered to a representative sample of 200 fourth-, fifth- and sixth-grade students in the project. Results of analysis of variance prompted the following conclusions: In the sample studied, no sexual differences existed on knowledge of occupations, awareness of occupations, and future occupational aspirations; teacher implementation of the career education concept caused differences in student gains on occupational knowledge and occupational awareness; and no effects on occupational awareness of students were due to parental occupational prestige level.

Like studies using the more complete designs, these nine studies employed a variety of outcome measures and documented, in most cases, significant gains by students enrolled in career education programs. A variety of attitude and knowledge measures were employed on a pretest and posttest basis, but significant gains are difficult to evaluate in the absence of comparison data.

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Case Studies

Many career education programs meet the requirement for evaluation by administering a questionnaire to students to solicit their opinions and feelings toward the program and possible recommendations for improvement (Krueck, 1972; Kunzman, 1973). Other evaluations are broader in scope in terms of those whose opinions and reactions are solicited. Questionnaires are distributed not only to students but to teachers, parents, and community members in an effort to estimate support; the overall impression of the evaluator reading the responses is reported (Jacobs, 1971; Mietus & Stilling, 1971; Nelson, Gage, & Walter, 1971; Carlson, 1972, 1973; McKinney, 1973). Some evaluations focus on a description of the process of the program -- for example, the degree of utilization of program materials by teachers (Moskowitz, 1973) -- rather than on the outcomes. Other evaluations use little if any instrumentation (Berg, 1972), and still others use extensive instrumentation but only summarize the results qualitatively (Willis, 1973 a, b) rather than providing any statistical analyses.

The prototype of the case study evaluation relies on the use of an outside evaluator or team of evaluators. This person (or persons) will usually spend from one to five or more days observing the program and talking to students, teachers, and possibly parents and community members. Information will also be gleaned from written documents and conversations with the program director. The impressions of the team members are then written up in the form of a narrative which may or may not be organized around a given set of questions or a prescribed outline (Jenkins, 1971; Educational Management Services, 1973; Klaut, 1973; Nerden, 1973; Riley, 1973; Schuemann, 1973; Shelford, 1973). Within the narrative, the evaluators

report their conclusions concerning the effectiveness of the program usually in terms of their judgment of whether the project has met its objectives.

Invariably case studies find the programs evaluated to be successful, and the above studies -- clearly more favorable than unfavorable -- were no exception. Whether this accurately reflects the strengths of career education or the vulnerability of the case study approach to subjectivity and bias cannot be determined, but, at any rate, the results of case studies such as these must be interpreted with caution.

II. A Framework for Assessing Career Education Utilization Programs

For the assessment of the adequacy or completeness of career education programs (or any other educational programs, for that matter) a framework or category system is helpful. A framework is also useful as a basis for making recommendations for subsequent evaluation research. Such a framework appears in Table 1.

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Table 1

Framework for Assessing Career Education Utilization
Program [illegible]

I. Design
   a. experimental and quasi-experimental: experimental vs. control group
   b. descriptive: one group - quantitative data
   c. case study: one group - qualitative data

II. Independent Variable - nature of treatment
   a. intensity
   b. duration
   c. teacher training
   d. public relations
   e. quality of materials
   f. grade level

III. Dependent Variables - outcomes
   A. Process
      a. teaching behavior
      b. student behavior
      c. counseling
   B. Product
      a. self-awareness (self-descriptions, self-concept)
      b. career-awareness (knowledge of careers)
      c. decision-making skills (ability to make decisions and solve problems)
      d. overall school behavior (grades, school achievement, attendance, attitudes toward school)
      e. career competencies (salable skills)
      f. career attitudes and interests (attitudes toward work, career development, interests)
   C. Follow-up

IV. Control Variables
   a. selection bias
   b. history bias
   c. maturation bias
   d. population restrictions

V. Data Analysis
   a. descriptive
   b. inferential

[illegible] of many of the studies reviewed in the first part of this paper in their reliance on the pretest design.

The Treatment

The second consideration in examining the evaluative studies is the treatment to be evaluated. The term [illegible] has covered a lot of ground. It covers programs that are experienced early and others only weekly; ones that are experienced in class and others after school. The programs may range from field trips to skill training. It can operate in elementary school or in high school. The reader must know what is being evaluated. Naturally, the less the intensity, duration, or quality of the treatment the less likely it is to have an effect. Evaluators are encouraged to describe treatments fully but economically. It is not the number of words of description but the amount of important information that counts. The use of a set of descriptors like those offered in Table 1 [illegible] may be helpful for this purpose. The studies reviewed devoted considerable space to the description of treatment although as pfeiffer tries again to [illegible] in our summaries. There is no problem with the amount of description; however, the use of descriptors might have helped to characterize it more exactly.

Outcomes

The outcome area is a major concern in this paper since assessment is its primary focus. Outcomes can be conveniently subdivided into groups -- that is, teachers, students, and classroom behavior as the product of the process, and product-student changes that occur over the process.

Process. Process outcomes, perhaps the less important of the two

stat stics should be used. Statistics help the reader determine the extent to which findings are true or spurious. This is true whether one is assessing gains from pretest to posttest using simple t-test results or carrying out more sophisticated analyses or covariance, comparing groups while statistically controlling for individual differences. In all cases, evaluators are urged to analyze their data statistically.

* * * * * *

The use of the above guidelines and recommendations should reduce the error in career education evaluations thereby allowing the results to be a more clearcut reflection of the efficiency of the programs themselves. The reader is also referred to Tuckman (1972) for more detailed information about evaluation.

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